Improving resource surveys for West Coast groundfish

Problem Statement

The National Marine Fisheries Service (NMFS) is mandated to maintain healthy, sustainable fish stocks important for commercial, recreational, and subsistence fisheries. Northwest Fisheries Science Center (NWFSC) scientists are increasingly concerned about the sustainability of the economically valuable West Coast groundfish fisheries, including the most important species such as Dover sole, sablefish, and thornyhead rockfish. The Center plays a key role in achieving this mandate by determining the abundance, distribution, and productivity of groundfish species through resource surveys. The data collected from these trawl surveys are used together with findings from life-history studies and landings data from the commercial fisheries to calibrate models of groundfish population dynamics. These models are used to generate estimates of current abundance levels, identify trends in abundance, estimate total fishing mortality, and predict sustainable annual harvest levels. These predicted harvest levels are then provided to the Pacific Fishery Management Council (PFMC) for their consideration as they establish annual harvest guidelines. These guidelines have a significant impact on the Northwest region's $100 million/year groundfish fisheries and related industries.

Critical Factors

- Recent declines in several important groundfish species are the result of a number of factors, including harvest levels that have been based on inadequate knowledge of stock abundance, distribution, and productivity. Although resource surveys have been conducted on the West Coast's continental slope since 1988 by the Alaska Fisheries Science Center's FRV *Miller Freeman*, due to competing research needs, the surveys have often lacked sufficient temporal and/or spatial coverage to acquire all the needed critical data on the distribution, abundance, and age structure of important groundfish stocks.

- No dedicated fisheries research vessel is available to do standardized, calibrated surveys.

- Increased survey data on groundfish stocks will be obtained by the Center utilizing chartered commercial fishing vessels for a total of approximately 90 days at sea in 1998.

Status of Research

A new series of coastwide resource assessment survey using commercial trawl fishing vessels was launched in August 1998 by the NWFSC and completed the end of October. This survey targeted on Dover sole, thornyheads, and sablefish. For the first time, new rules on "fish for research" were employed to incorporate additional fishing opportunities into the charter compensation package. The vessels received half their reimbursement in cash and half by selling fish caught during the survey. Subsequent fishing trips will be allowed to make up the balance.

The objectives achieved by the new survey included: 1) characterizing the relative abundance and distribution of the slope species complex, 2) verifying the feasibility of using West Coast commercial trawlers for this work, and 3) testing and proving new methods and technologies for data acquisition and recording appropriate to this research situation.

Four chartered boats were used to survey the area from Cape Flattery, Washington to Morro Bay, California on alternating track lines. Together they completed 85% of the planned 400 stations. The survey has shown that we indeed are able to carry out sampling efforts aboard coastal fishing vessels carrying small scientific parties. Furthermore, the efforts resulted in consistent and measurable sampling gear performance across a broad and challenging range of conditions and habitats. While this survey will provide useful information, it is limited in scope. It will allow us to complete narrowly focused research with limited staff until we have a dedicated research vessel, which will allow multi-project efforts.

The information gathered will add to our understanding of the biology and population dynamics of these stocks. This will allow us to provide the PFMC with the information necessary to manage the fisheries to achieve optimal, sustainable harvests of important groundfish species.

Future Considerations

Our immediate focus will be on improving our ability to track trends in the relative abundance of critical West Coast species. As our capabilities evolve, our at-sea efforts will expand to include sampling juveniles of the critical species, studies of the structure and functional relationships within the marine ecosystem supporting these resources, and studies of habitat / resource interactions. All of these near-term and long-term efforts require substantial augmentation of our seagoing research assets, including a modern, multi-purpose medium-endurance fishery research vessel capable of simultaneous operation of hydroacoustic sampling gear, large fishing trawls, and oceanographic equipment.

Key Players

Fishery Resource Analysis and Monitoring Division (FRAM), NWFSC
Alaska Fisheries Science Center, NMFS
Southwest Fisheries Science Center, NMFS
Pacific Fishery Management Council
Pacific States Marine Fisheries Commission
California Department of Fish and Game
Oregon Department of Fish and Wildlife
Washington Department of Fish and Wildlife
Oregon State University
University of Washington
Oregon Trawl Commission

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